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Australian Standard™

Industrial automation systems and integration—Product data representation and exchange

Part 45: Integrated generic resources: Materials

Standards Australia

This Australian Standard was prepared by Committee IT/6, Information Technology for Industrial Automation and Integration. It was approved on behalf of the Council of Standards Australia on 3 July 2000 and published on 30 August 2000.

The following interests are represented on Committee IT/6:

Australian Association of Consulting Engineers

Australian Electrical and Electronic Manufacturers Association

Australian Information Industry Association

CSIRO Centre for Planning and Design

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PREFACE

This Standard was prepared by the Standards Australia Committee IT/6, Information Technology for Industrial Automation and Integration. This Standard is identical with and has been reproduced from ISO 10303-45:1998, *Industrial automation systems and integration—Product data representation and exchange*, Part 45: *Integrated generic resource: Materials*. Technical Corrigendum 1:1999 is bound at the back of this Standard.

The objective of this Standard is to provide designers of computer-interpretable representation and exchange of product data with a specification for the resource constructs for the material properties of a product and for the characterisation of a numerical data value as to its uncertainty and reliability.

This Standard is Part 45 of AS 10303, *Industrial automation systems and integration—Product data representation and exchange*, which is published in parts as follows:

Part 1: Overview and fundamental principles
Part 11: Description methods: The EXPRESS language reference manual
Part 12: Description methods: The EXPRESS-I language reference manual
Part 21: Implementation methods: Clear text encoding of the exchange structure
Part 22: Implementation methods: Standard data access interface
Part 31: Conformance testing methodology and framework: General concepts
Part 41: Integrated generic resources: Fundamentals of product description and support
Part 42: Integrated generic resources: Geometric and topological representation
Part 43: Integrated generic resources: Representation structures
Part 44: Integrated generic resources: Product structure configuration
Part 45: Integrated generic resources: Materials (this Standard)
Part 46: Integrated generic resources: Visual presentation
Part 47: Integrated generic resource: Shape variation tolerances
Part 49: Integrated generic resources: Process structure and properties
Part 101: Integrated application resources: Draughting
Part 105: Integrated application resource: Kinematics
Part 201: Application protocol: Explicit draughting
Part 202: Application protocol: Associative draughting
Part 203: Application protocol: Configuration controlled design
Part 203: Application protocol—Configuration controlled design (Amendment.1)
Part 207: Application protocol: Sheet metal die planning and design
Part 224: Application protocol: Mechanical product definition for process planning using machining features

Annex C is available on the included diskette.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative annex’ is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘this part of ISO 10303’ should read ‘this Australian Standard’.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian or Australian/New Zealand Standard*	
ISO		AS	
10303	Industrial automation systems and integration—Product data representation and exchange	10303	Industrial automation systems and integration—Product data representation and exchange
10303-1	Part 1: Overview and fundamental principles	10303.1	Part 1: Overview and fundamental principles
10303-11	Part 11: Description methods: The EXPRESS language reference manual	10303.11	Part 11: Description methods: The EXPRESS language reference manual
10303-41	Part 41: Integrated generic resources: Fundamentals of product description and support	10303.41	Part 41: Integrated generic resources: Fundamentals of product description and support
10303-43	Part 43: Integrated generic resources: Representation structures	10303.43	Part 43: Integrated generic resources: Representation structures
ISO/IEC		AS/NZS	
8824	Information technology—Abstract Syntax Notation One (ASN.1)	8824	Information technology—Abstract Syntax Notation One
8824-1	Part 1: Specification of basic notation	8824.1	Part 1: Specification of basic notation

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AUSTRALIAN STANDARD

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1 Scope

This part of ISO 10303 specifies the resource constructs for the material properties of a product and for the characterization of a numerical data value as to its uncertainty and reliability.

The following are within the scope of this part of ISO 10303:

- association of a material property with a product;
- specification of the composition of a product in terms of the amount and type of its constituents;
- specification of the set of qualitative and quantitative conditions under which a material property is valid;
- characterization of a numerical data value as to its uncertainty and reliability;
- specification of the representation of a material property, including properties that are measured or assigned;
- the material properties of the surface of a product, including coatings.

NOTE – This part of ISO 10303 may be used to describe the material properties of a first stage product, such as cast ingot; an intermediate product, such as a tube or sheet; or a final stage product requiring no further processing, such as a part pressed from a sheet.

The following are outside the scope of this part of ISO 10303:

- the combination and transformation of material property values;

  EXAMPLE 1 – A design value is determined by statistical analysis of a large number of test results whose values have been combined together. This part of ISO 10303 provides for the representation of the test results and for the representation of their combination but does not address the process of combination.

- the use of material properties in the analysis of product behaviour;

  EXAMPLE 2 – Individual property values may be combined into matrices of coefficients for use in analysis models.

- the detailed geometry of the surface modification or surface finish of a product.